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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/921,583	08/06/2001	Satoshi Yatabe	110266	9671

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EXAMINER
SHAPIRO, LEONID

ART UNIT	PAPER NUMBER
2673	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/921,583	YATABE, SATOSHI	
	Examiner	Art Unit	
	Leonid Shapiro	2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-6 and 9-15* is/are rejected.

7)☒ Claim(s) *2,3,7 and 8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 August 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. Figures 1, 24-26, 31 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities: On page 12 , paragraph 0034 items 312, 212 not shown in Fig. 1.

Appropriate correction is required.

4. Substitute specification, filed on 11-13-01 is entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 4,6, 9,11,15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rader (US Patent No. 5867140) in view of APA (Admitted Prior Art).

As to claim 1, Rader teaches a diving method of a display device for driving pixels are arranged at each of intersections of a plurality of scanning lines and plurality of data lines (See Fig. 3, items 200, 311, 313, in description See Col. 1, Lines 14-21, Col. 2, Lines 46-52), comprising: setting pixel at each of intersections of particular ones of the plurality of scanning lines and particular ones of plurality of data lines to be in a display state while remaining pixels are set to be in a non-display state (See Fig. 3, items303, 305, in description See Col. 2, Lines 21-31); selecting particular scanning lines, one line for every horizontal scanning period with the selection voltage supplied to the selected scanning line, the polarity of the selection voltage being inverted with respect to an intermediate value between a lighting voltage and nonlighting voltage, supplied to the data line (See Fig. 4, items 414, 416, 424, 420, in description See Col. 5, Lines 19-27, Col. 7, Lines 8-19 and 40-49); supplying each of scanning lines other than particular scanning lines with a non-selection voltage which is inverted in polarity with respect to the intermediate value every one or more scanning periods (See Fig. 4, items 414, 416, 424, 420, in description See Col. 7, Lines 8-19 and 40-49); supplying each of the particular data lines with a lighting voltage in accordance with a content to be displayed on a pixel at an intersection of the selected scanning line and the particular data line for period during which the selection voltage is supplied to the selected scanning line, within one horizontal scanning period for selecting one of the particular scanning lines (See Fig. 4, items 424, 444, 420, 311, in description See Col. 6, Lines 5-14); supplying the data line other than the particular data lines with the non-lighting voltage for a period during which the particular scanning lines are consecutively selected

in response to the polarity of the selection voltage supplied to the selected scanning lines, wherein the polarity of the non-lighting voltage is inverted in synchronization with the period of polarity inversion of the selection voltage (See Fig. 4, items 414, 416, 424, 420, in description See Col. 7, Lines 40-49).

Rader does not show one of two split halves of the one horizontal scanning period every two or more horizontal scanning periods and the particular data line being supplied with the lighting voltage and the non-lighting voltage for substantially equal periods within the one horizontal scanning period for the selected scanning line.

APA teaches in conventional four-value driving (1/2H selected, 1H inverted) driving method one of two split halves of the one horizontal scanning period every two or more horizontal scanning periods and the particular data line being supplied with the lighting voltage and the non-lighting voltage for substantially equal periods within the one horizontal scanning period for the selected scanning line (See Fig. 26, items Yj,Yj+1, in description See page 32, paragraphs 0107-0109). It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate one of two split halves of the one horizontal scanning period every two or more horizontal scanning periods and the particular data line being supplied with the lighting voltage and the non-lighting voltage for substantially equal periods within the one horizontal scanning period for the selected scanning line as conventional method in the Rader method in order to improve the display for cellular radiotelephone, pager and so on (See Col. 1, Lines 62-68 in the Rader reference).

As to claim 6, Rader teaches a driving circuit of a display device for driving pixels are arranged at each of intersections of a plurality of scanning lines and plurality of data lines (See

Fig. 3, items 200, 311, 313, in description See Col. 1, Lines 14-21, Col. 2, Lines 46-52), in which a pixel at each of intersections of particular ones of the plurality of scanning lines and particular ones of plurality of data lines to be in a display state while remaining pixels are set to be in a non-display state (See Fig. 3, items303, 305, in description See Col. 2, Lines 21-31); a scanning line driving circuit and a data line driving circuit (See Fig. 3, items 311, 313, in description See Col. 247-53); wherein the scanning line driving circuit selects particular scanning lines, one line for every horizontal scanning period with the selection voltage supplied to the selected scanning line, the polarity of the selection voltage being inverted with respect to an intermediate value between a lighting voltage and non-lighting voltage, supplied to the data line, every two or more horizontal scanning periods, and supplies the scanning line other than particular scanning lines with a non-lighting voltage which is inverted in polarity with respect to the intermediate value every one or more vertical periods (See Fig. 4, items 414, 416, 424, 420, in description See Col. 7, Lines 8-19 and 40-49); the data line driving circuit supplies the particular data lines with a lighting voltage in accordance with a content to be displayed on a pixel at an intersection of the selected scanning line and the particular data line for period during which the selection voltage is supplied to the selected scanning line, within one horizontal scanning period for selecting one of the particular scanning lines (See Fig. 4, items 424, 444, 420, 311, in description See Col. 6, Lines 5-14); supplies the data line other than particular data line with non-lighting voltage for a period during which the particular scanning lines are consecutively selected in response to the polarity of the selection voltage supplied to the selected scanning lines, wherein the polarity of the non-lighting voltage is inverted in synchronization with the period of polarity inversion of the selection voltage (See Fig. 4, items 414, 416, 424, 420, in description See Col. 7, Lines 40-49).

Rader does not show one of two split halves of the one horizontal scanning period every two or more horizontal scanning periods and the particular data line being supplied with the lighting voltage and the non-lighting voltage for substantially equal periods within the one horizontal scanning period for the selected scanning line.

APA teaches in conventional four-value driving (1/2H selected, 1H inverted) driving method one of two split halves of the one horizontal scanning period every two or more horizontal scanning periods and the particular data line being supplied with the lighting voltage and the non-lighting voltage for substantially equal periods within the one horizontal scanning period for the selected scanning line (See Fig. 26, items Yj,Yj+1, in description See page 32, paragraphs 0107-0109). It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate one of two split halves of the one horizontal scanning period every two or more horizontal scanning periods and the particular data line being supplied with the lighting voltage and the non-lighting voltage for substantially equal periods within the one horizontal scanning period for the selected scanning line as conventional method in the Rader apparatus in order to improve the display for cellular radiotelephone, pager and so on (See Col. 1, Lines 62-68 in the Rader reference).

As to claim 11, Rader teaches a display device for driving pixels are arranged at each of intersections of a plurality of scanning lines and plurality of data lines (See Fig. 3, items 200, 311, 313, in description See Col. 1, Lines 14-21, Col. 2, Lines 46-52), in which a pixel at each of intersections of particular ones of the plurality of scanning lines and particular ones of plurality of data lines to be in a display state while remaining pixels are set to be in a non-display state (See Fig. 3, items303, 305, in description See Col. 2, Lines 21-31), the display comprising: a

scanning line driving circuit and a data line driving circuit (See Fig. 3, items 311, 313, in description See Col. 247-53); wherein the scanning line driving circuit selects particular scanning lines, one line for every horizontal scanning period with the selection voltage supplied to the selected scanning line, inverts a polarity of the selection voltage with respect to an intermediate value between a lighting voltage and non-lighting voltage, supplied to the data line, every two or more horizontal scanning periods, and supplies the scanning line other tnan the particular scanning lines with a non-selection voltage which is inverted in polarity with respect to the intermediate value every one or more vertical scanning periods (See Fig. 4, items 414, 416, 424, 420, in description See Col. 7, Lines 8-19 and 40-49), and the data line driving circuit supplies the particular data lines with a lighting voltage in accordance with a content to be displayed on a pixel at an intersection of the selected scanning line and the particular data line for period during which the selection voltage is supplied to the selected scanning line, within one horizontal scanning period for selecting one of the particular scanning lines (See Fig. 4, items 424, 444, 420, 311, in description See Col. 6, Lines 5-14); supplies the particular data line other than the particular data lines with the non-lighting voltage for a period during which the particular scanning lines are consecutively selected in response to the polarity of the selection voltage supplied to the selected scanning lines, wherein the polarity of the non-lighting voltage is inverted in synchronization with the period of polarity inversion of the selection voltage (See Fig. 4, items 414, 416, 424, 420, in description See Col. 7, Lines 40-49).

Rader does not show one of two split halves of the one horizontal scanning period every two or more horizontal scanning periods and the particular data line being supplied with the

lighting voltage and the non-lighting voltage for substantially equal periods within the one horizontal scanning period for the selected scanning line.

APA teaches in conventional four-value driving (1/2H selected, 1H inverted) driving method one of two split halves of the one horizontal scanning period every two or more horizontal scanning periods and the particular data line being supplied with the lighting voltage and the non-lighting voltage for substantially equal periods within the one horizontal scanning period for the selected scanning line (See Fig. 26, items Yj,Yj+1, in description See page 32, paragraphs 0107-0109). It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate one of two split halves of the one horizontal scanning period every two or more horizontal scanning periods and the particular data line being supplied with the lighting voltage and the non-lighting voltage for substantially equal periods within the one horizontal scanning period for the selected scanning line as conventional method in the Rader apparatus in order to improve the display for cellular radiotelephone, pager and so on (See Col. 1, Lines 62-68 in the Rader reference).

As to claims 4,9, Rader teaches for a duration of time during which the scanning lines other the particular scanning lines are consecutively selected, the data lines are supplied with a signal having a positive voltage portion and a negative voltage portion with respect to the intermediate value, the signal alternating between the positive voltage portion and the negative portion with respect to the intermediate value every one or more horizontal scanning periods (See Fig. 4, items 420, 305, 424, 200, in Description See Col. 7, Lines 40-49).

As to claim 15, Rader teaches electronic equipment comprising a display device (See FIG. 2, item100, 200, in description See from Col. 1, Line 59 to Col. 2, Line 9).

6. Claims 5,10, are rejected under 35 U.S.C. 103(a) as being unpatentable over Rader and APA as aforementioned in claims 4,9 in view of Yokota et al. (US Patent No. 6,181,313 B1).

Rader and APA does not show the polarity inversion period of the signal having the positive and negative voltage portion is a fraction of the horizontal scanning period determined by dividing the total number of scanning lines other than particular scanning lines by an integer number equal two or more.

Yokota et al. teaches a drive duty selection register (See Fig. 1, items 3, 34, in description See Col. 8, lines 43-53 and Col. 9, Lines 64-68). It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate duty cycle control as shown Yokota et al. in the Rader and APA apparatus and method to control polarity of the inversion period for the scanning lines other than the particular scanning lines in order to improve the display for cellular radiotelephone, pager and so on (See Col. 1, Lines 62-68 in the Rader reference).

7. Claims 12-14 rejected under 35 U.S.C. 103(a) as being unpatentable over Rader and APA as aforementioned in claim 11 in view of Shimada (US Patent No. 6, 512, 506 B1).

As to claim 12, Rader and APA do not show a switching element and capacitive element containing an electro-optical material, wherein when one scanning line is supplied with the selection voltage, the switching element of the pixel assigned to the selected scanning line becomes conductive and writing is performed on a capacitive element corresponding to the switching element in response to a lighting voltage supplied to the corresponding data line.

Shimada teaches a switching element and capacitive element containing an electro-optical material, wherein when one scanning line is supplied with the selection voltage, the switching element of the pixel assigned to the selected scanning line becomes conductive and writing is performed on a capacitive element corresponding to the switching element in response to a lighting voltage supplied to the corresponding data line (See Fig. 2, items 2a, 2b,Ym, Xn, in description See Col. 9, lines 26-41). It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate switching and a capacitive element as shown by Shimada in the Rader and APA apparatus and method in order to improve power consumption (See Col. 8, Lines 35-39 in the Shimada reference).

As to claims 12-13, Shimada teaches the switching element is a two-terminal switching element (MIM or conductor-insulator-conductor) and the capacitive element connected in series between scanning line and data line (See Fig. 2, items 2a, 2b,Ym, Xn, in description See Col. 9, lines 26-41).

Allowable Subject Matter

8. Claims 2-3 and 7-8 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

The Phillipps (US Patent no. 6,137,481) reference discloses portable computer having power saving provisions.

The Blouin et al. (US Patent no. 6,075,510) reference discloses low power refreshing (smart display multiplexing).

The Ogawa (US Patent no. 6,018,331) reference discloses frame display control in an image display having a LCD panel.

Telephone inquire

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 703-305-5661. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 703-305-4938. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

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May 1, 2003

BIPIN SHALWALA
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